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Kuroda

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(54) **CONNECTOR WITH AT LEAST ONE DETECTOR**

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H01R 13/44 (2006.01)
H01R 13/627 (2006.01)
H01R 13/639 (2006.01)
H01R 13/642 (2006.01)

(52) **U.S. Cl.**

CPC ***H01R 13/44*** (2013.01); ***H01R 13/6272*** (2013.01); ***H01R 13/639*** (2013.01); ***H01R 13/642*** (2013.01)

(58) **Field of Classification Search**

CPC H01R 13/4362; H01R 13/4365; H01R 13/4368; H01R 13/44; H01R 13/642; H01R 13/6272; H01R 13/6273

USPC 439/489, 352, 353, 354, 357

See application file for complete search history.

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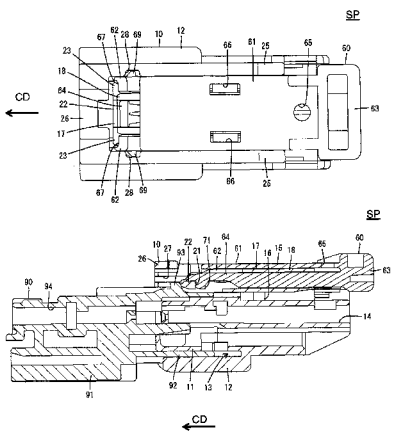
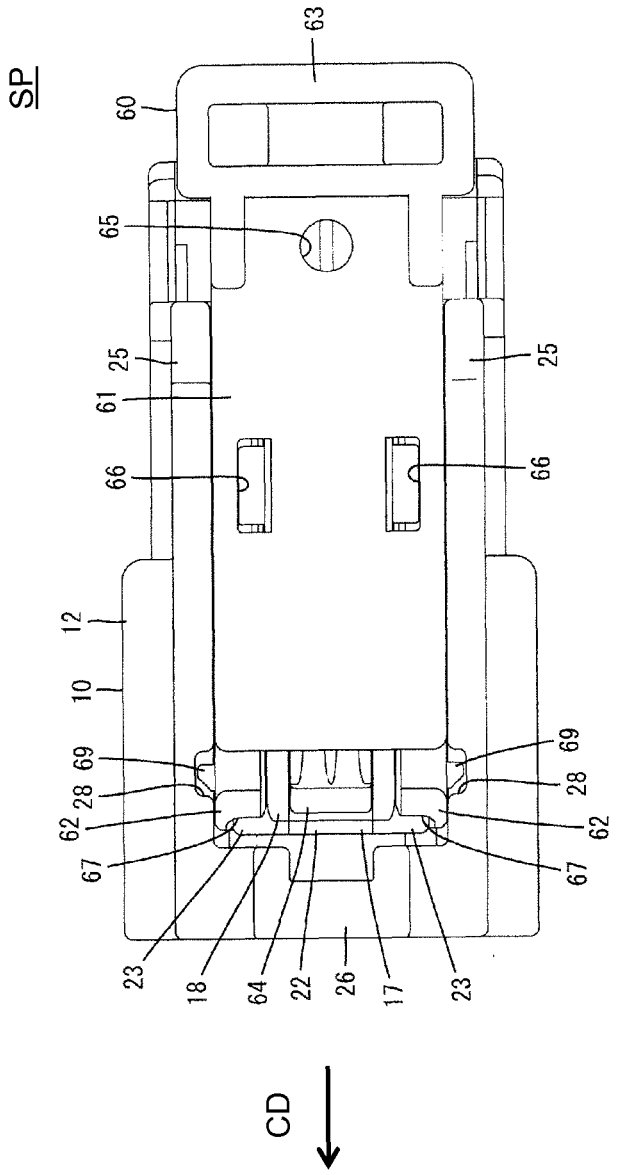
(57) **ABSTRACT**

A detector (**60**) is supported on a lock arm (**15**) of the housing (**10**) movably between a standby position and a detection position. The detector (**60**) includes restricting portions (**69**) and the housing (**10**) include escaping portions (**28**). The escaping portions (**28**) extend in a direction intersecting a connecting direction, and the restricting portions (**69**) are inserted therein when the detector (**60**) is inclined in a connecting process and brought into contact with a wall surface facing in a moving direction of the detector (**60**) to prevent the detector (**60**) from reaching the detection position while being kept in an inclined state when the detector (**60**) moves from the standby position toward the detection position.

11 Claims, 10 Drawing Sheets




SP
63
60
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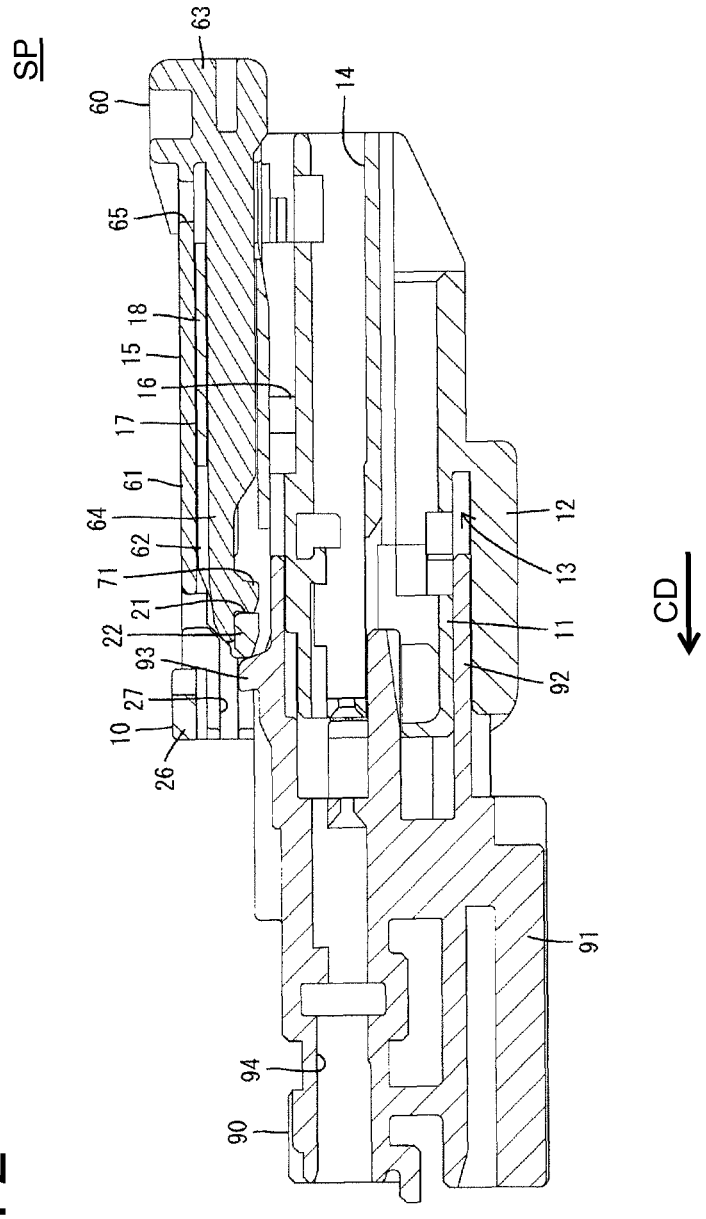
61
66
25
66
12
10
69
28
62
67
69
28
62
67
23
18
64
22
26
17
23
CD

FIG. 1


SP
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60
14
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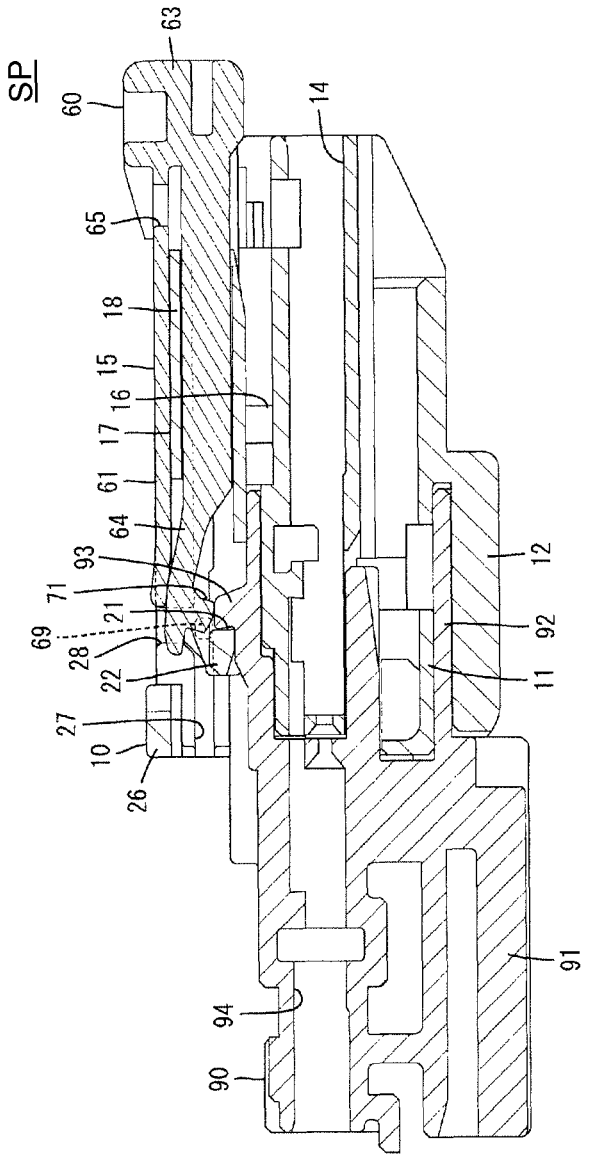
94
90
CD

FIG. 2


SP
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92
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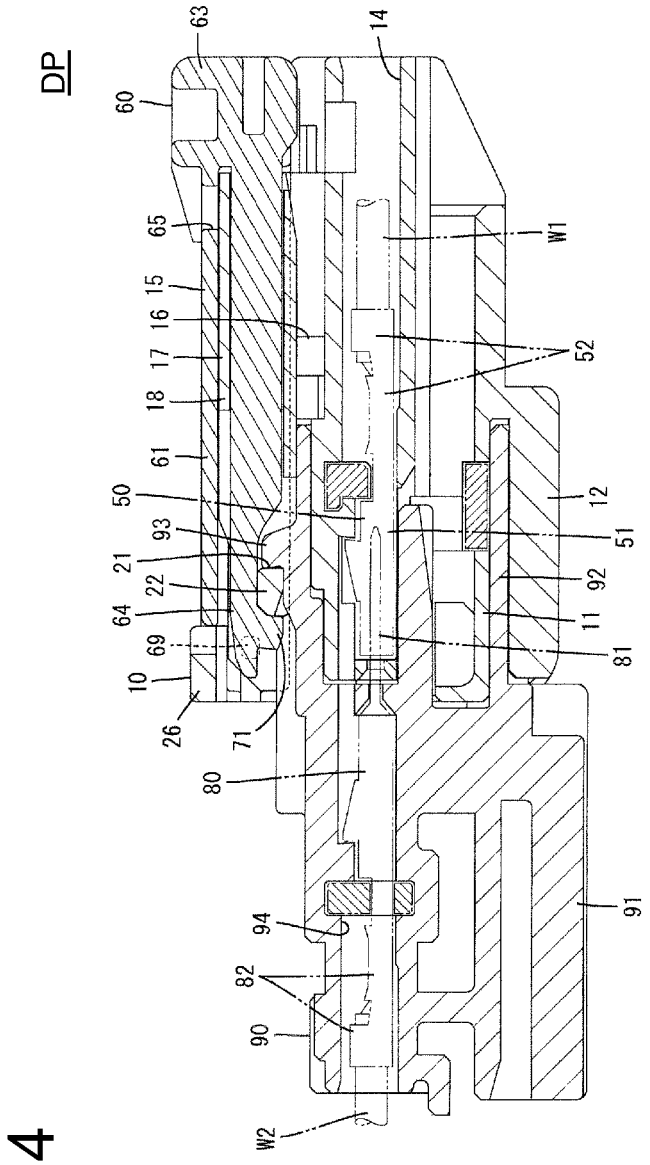
91
94
90

FIG. 3


DP
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14
60
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W1
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17
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12
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11
69
81
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26
71
80
91
94
82
90
W2

FIG. 4

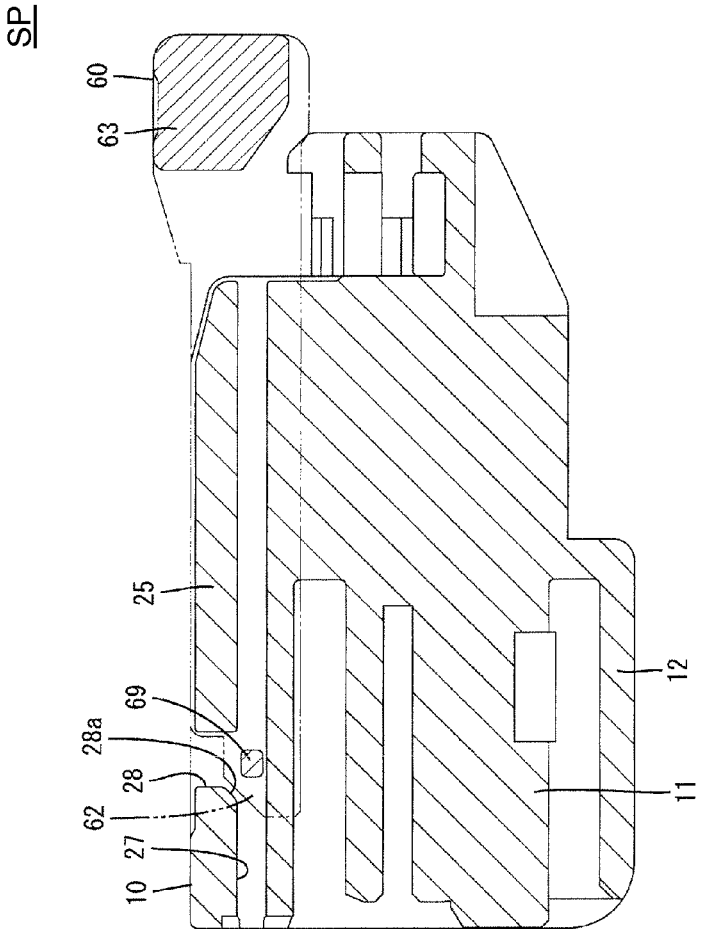


FIG. 5

FIG. 6

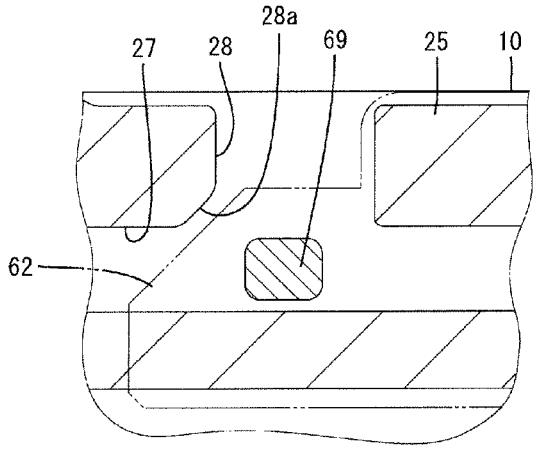


FIG. 7

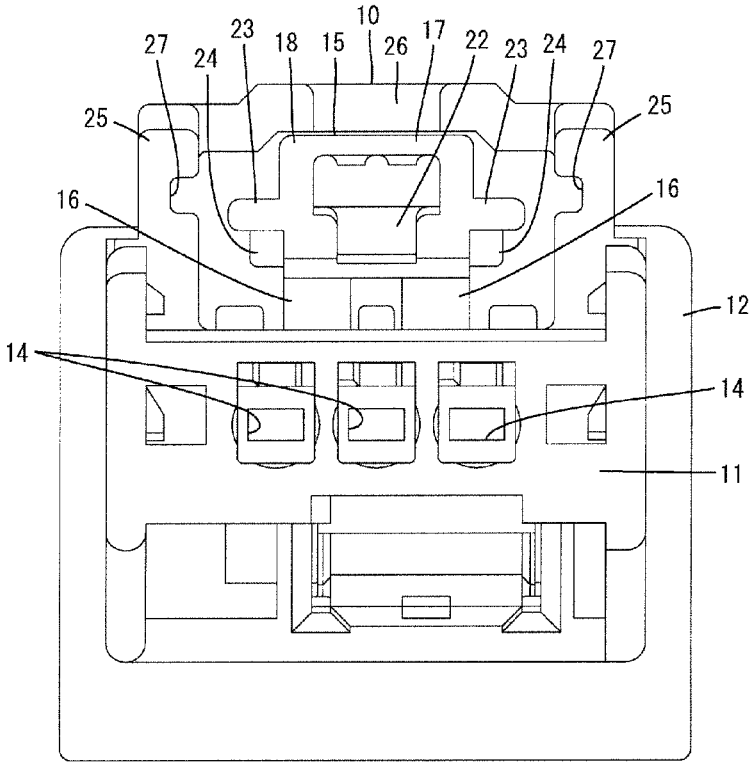


FIG. 8

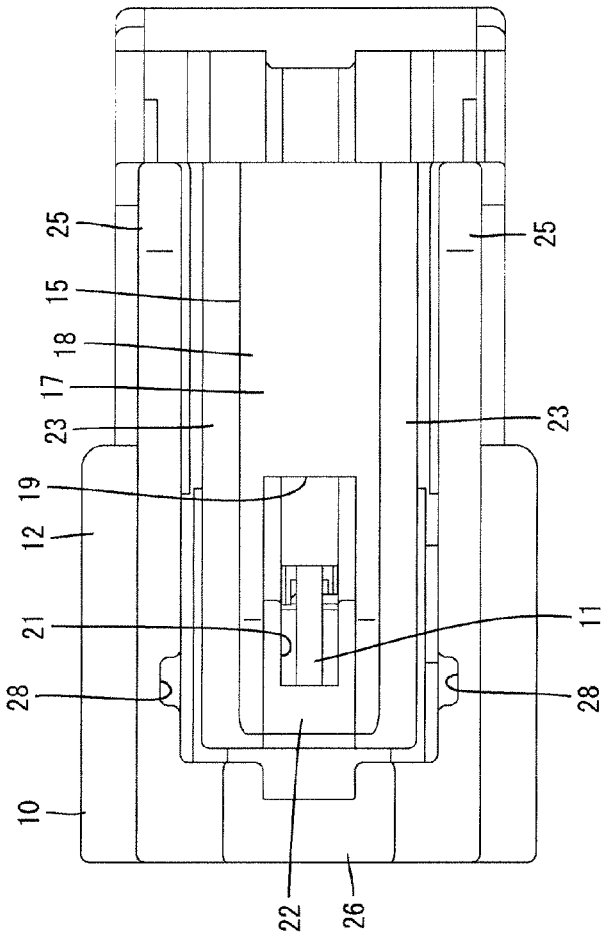
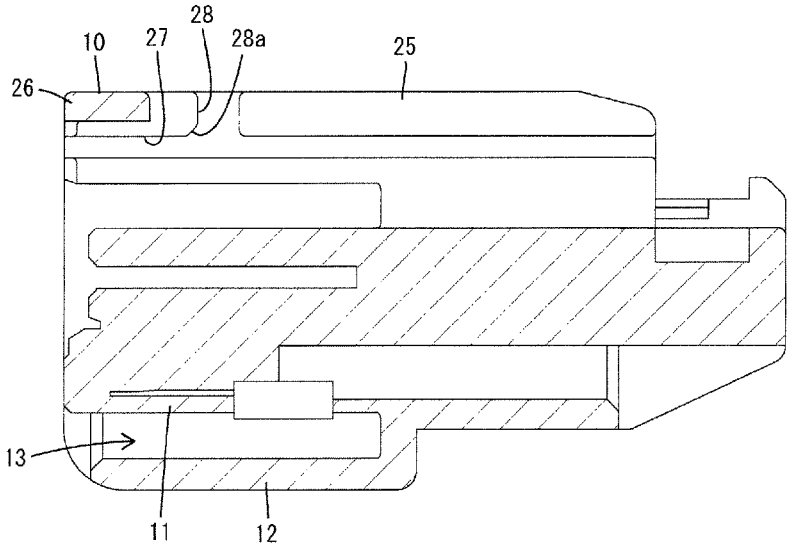


FIG. 9



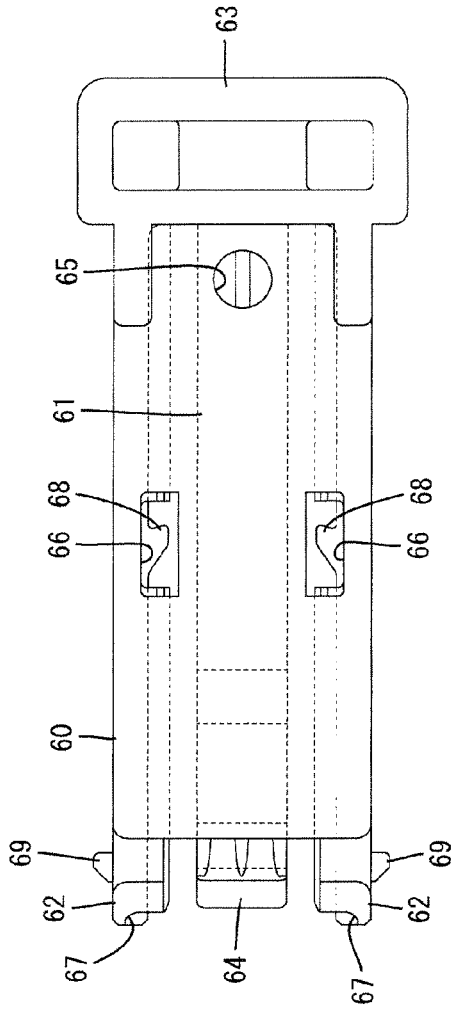


FIG. 10

CONNECTOR WITH AT LEAST ONE DETECTOR

BACKGROUND

1. Field of the Invention

The present invention relates to a connector.

2. Description of the Related Art

U.S. Pat. No. 7,722,385 discloses a connector with a housing that has a deflectable lock arm. The housing is connectable to a mating housing and has a detecting member movable in a connecting direction from a standby position to a detection position while supported on the lock arm. The lock arm interferes with a lock projection on the mating housing while connecting the housing to the mating housing and deflects. As a result, the detecting member inclines with respect to the connecting direction. Further, the detecting member is kept at the standby position and is prevented from moving to the detection position in the process of connecting the housings. The lock arm displaces in a return direction when the housing is connected properly to the mating housing and engages the lock projection to hold the housings in a connected state. Further, the detecting member is released from the standby position and can move to the detection position, thereby indicating that the housings have been connected properly.

The detecting member that has moved toward the detection position after the housings are connected properly may remain inclined and may interfere with a facing wall of the housing or the like and come off, which may impair in connection detection reliability.

The invention was completed based on the above situation and aims to enhance reliability in connection detection.

SUMMARY OF THE INVENTION

The invention relates to a connector with a housing that is connectable to a mating housing. The housing has a deflectable lock arm and a detector is supported on the lock arm. The detector is movable in a connecting direction from a standby position to a detection position. The lock arm is deflected and deformed in the process of connecting the housing to the mating housing and is kept at the standby position in a state inclined with respect to the connecting direction. The lock arm is displaced in a return direction to hold the mating housing in a connected state and the detector is allowed to move to the detection position as the housing is connected properly to the mating housing. The detector includes a restricting portion, and the housing includes an escaping portion extending in a direction intersecting the connecting direction. The escaping portion is configured to receive the restricting portion when the detector is inclined in a connecting process and is configured to prevent the detector from reaching the detection position in an inclined state by causing the restricting portion to contact a wall surface that faces in a moving direction of the detector when the detector moves from the standby position to the detection position.

The housing may include at least one guide connected to the at least one escaping portion and extending substantially in the connecting direction. The guide is configured so that the restricting portion is inserted therein to guide a movement of the detector in the process of moving the detector from the standby position to the detection position. The detector can smoothly reach the detection position from the standby position by the insertion of the restricting portion into the guide.

An opening edge of the guide and/or of the escaping portion may be curved and chamfered.

At least one wall of the housing may be present at an intermediate position of a virtual movement path when the detector inclined in the connecting process and is assumed to move to the detection position while being kept in the inclined state. In the prior art, the inclined detector may contact with the wall of the housing on the way to the detection position and may not reach the detection position. However, in the case of the invention, a movement of the detector in the inclined state to the detection position is hindered by the escaping portion, wherefore the inclined state of the detecting member is canceled and the detector is brought reliably to the detection position.

The escaping portion may have at least one inclined guide surface that is configured to cancel the inclined state of the detector and to guide the detector to a proper posture by causing the detector moving toward the detection position to slide thereon. Thus, the detector will reach the detection position while being corrected to the proper posture.

The detector may include an upper plate, two side plates extending substantially in the connecting direction along the upper plate, a rear portion extending substantially in the width direction and a resilient lock extending substantially forward from the rear portion.

A front end of the upper plate may be retracted back from the front ends of the side plates and the front end of the resilient lock.

A front end of the restricting portion may be inclined back toward a projecting tip and a rear end of the restricting portion may be arranged substantially along the width direction.

When the detector is at the standby position, the retaining receiving portion is arranged to contact the retaining portion to prevent a backward movement of the detector and the locking projection is arranged to contact a rear end of a lock of the housing to prevent a forward movement of the detector.

When the detector is at the detection position, the locking projection is arranged to contact the lock to prevent a backward movement of the detector and the upper plate is arranged to contact a stopper wall of the housing to prevent a forward movement of the detector

At least one confirmation window may be provided in the detector and the housing to allow confirming the position of the detector through the confirmation window.

According to the above, if the detector is kept inclined with respect to the connecting direction when the detector moves toward the detection position after the two housings are properly connected, the restricting portion contacts the wall surface of the escaping portion. Thus, a movement of the detector kept in the inclined state to the detection position is prevented. Therefore, reliability in connection detection by the detecting member can be enhanced.

These and other objects, features and advantages of the invention will become more apparent upon reading of following detailed description of preferred embodiments and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view showing a state where a detector is held at a standby position in a housing in a connector of an embodiment of the invention.

FIG. **2** is a section showing a state where the housing is fit lightly to a mating housing.

FIG. **3** is a section showing a state where the housing is properly connected to the mating housing and the detector at the standby position is released from a locked state.

FIG. **4** is a section showing a state reached by moving the detector to a detection position.

FIG. **5** is a section, cut at a position corresponding to restricting portions, showing a state where the detector is held at the standby position in the housing.

FIG. **6** is an enlarged view of an essential part of FIG. **5**.

FIG. **7** is a rear view of the housing.

FIG. **8** is a plan view of the housing.

FIG. **9** is a section of the housing.

FIG. **10** is a plan view of the detecting member.

DETAILED DESCRIPTION

A connector in accordance with an embodiment of the invention includes a housing **10** and a detector **60** to be assembled with the housing **10** in FIGS. **1**-**10**. The housing **10** is connectable to a mating housing **90**. Note that, in the following description, ends facing each other when the connection of the two housings **10**, **90** is started are referred to as front ends concerning a front-back direction, and a vertical direction is based on FIGS. **2** to **7** and **9**. In the following description, the front-back direction is synonymous with a connecting direction CD.

The mating housing **90** is made of synthetic resin and includes, as shown in FIG. **2**, a block-like terminal accommodating portion **91** and a tubular receptacle **92** projecting forward from the front end of the terminal accommodating portion **91**. A lock **93** projects on the upper surface of the upper wall of the receptacle **92**.

Mating cavities **94** extend in the front-back direction in the terminal accommodating portion **91**. The mating cavities **94** are arranged side by side in a width direction and mating terminal fittings **80** are inserted therein from behind, as shown in FIG. **4**. The mating terminal fitting **80** is made of electrically conductive metal and includes a male tab **81** projecting forward and a barrel-shaped mating crimping portion **82** located behind the male tab **81**. The mating crimping portion **82** is connected by crimping to an end part of a wire W**2**. Further, the male tab **81** is arranged to project into the receptacle **92**.

The housing **10** is made of synthetic resin and includes a block-like housing main body **11** and a fitting tube **12** surrounding the housing main body **11**, as shown in FIG. **9**. A space between the housing main body **11** and the fitting tube **12** is open forward as a connection space **13**. As shown in FIG. **2**, the receptacle **92** of the mating housing **90** is fittable into the connection space **13** of the housing **10**.

Cavities **14** extend through the housing main body **11** in the front-back direction at positions corresponding to the respective mating cavities **94**. The cavities **14** are arranged side by side in the width direction, as shown in FIG. **7**, and terminal fittings **50** are inserted therein from behind, as shown in FIG. **4**. The mating terminal fitting **50** is made of electrically conductive metal and, as shown in FIG. **4**, includes a tubular terminal main body **51** and a barrel-shaped crimping portion **52** located behind the terminal main body **51**. The crimping portion **52** is crimped and connected to an end part of a wire W**1**. Further, the male tab **81** of the mating terminal fitting **80** is inserted into the terminal main body **51** when the two housings **10**, **90** are connected. The male tab **81** is inserted into the terminal main body **51** contacts an unillustrated contact portion in the terminal main body **51** to connect the two terminal fittings **50**, **80** electrically.

A lock arm **15** is provided on the upper surface of the housing main body **11**. The lock arm **15** includes two legs **16** standing from the upper surface of the housing main body **11**, as shown in FIG. **7**, and an arm main body **17** extends in both forward and backward directions from the upper ends of both legs **16**, as shown in FIG. **2**. The arm main body **17** is resiliently displaceable in a seesaw-like pivotal displacement with both legs **16** as supports.

As shown in FIGS. **2** and **8**, the arm main body **17** includes an inserting tube **18** in the form of a rectangular tube penetrating in the front-back direction. The detector **60** is mounted into the inserting tube **18** from behind. As shown in FIG. **8**, a substantially front half of the upper wall of the inserting tube portion **18** is open as a cut-like opening **19**. Further, a lock hole **21** penetrates through the lower wall of the inserting tube **18** below the opening **19**. In a state where the detector **60** is not assembled with the lock arm **15**, the upper surface of the housing main body **11** can be confirmed visually through the opening **19** and the lock hole **21**. A lock **22** extends in the width direction before the lock hole **21** on a front end part of the inserting tube **18**.

Rails **23** extend in the front-back direction on opposite side edges of the inserting tube **18**, as shown in FIGS. **7** and **8**. Furthermore, two retaining portions **24** are coupled unitarily to lower sides of both rails **23** and project substantially in the centers of the opposite side edges of the inserting tube **18** in the front-back direction.

As shown in FIG. **7**, two side walls **25** stand substantially vertically at opposite sides of the lock arm **15** atop the fitting tube **12**. The lock arm **15** is protected by being covered laterally by the side walls **25**. Further, a stopper wall **26** (see FIG. **8**) bridges between the upper edges of the front ends of both side walls **25** is higher above the fitting tube **12**.

As shown in FIGS. **7** and **9**, guides **27** in the form of recessed grooves are provided on the opposed inner surfaces of the side walls **25** and extend over the entire length in the front-back direction. Later-described restricting portions **69** of the detector **60** are fit and inserted into the guides **27**. Further, as shown in FIGS. **6** and **9**, two escaping portions **28**, in the form of recessed grooves, are provided on the inner surfaces of the side walls **25** and communicate with intermediate parts near the front ends of the guides **27** in the front-back direction. The escaping portions **28** extend from coupled positions in an upward direction intersecting the front-back direction and open on the upper ends of the side walls **25**. The restricting portions **69** moving from the both guides **27** are loosely insertable into the escaping portions **28**. Note that opening edges of the guides **27** and the escaping portions **28** on the inner surfaces of the side walls **25** are curved and chamfered over the entireties.

The detector **60** is made of synthetic resin and has a rectangular shape that is long in the front-back direction in a plan view, as shown in FIG. **10**. The detector **60** is movable to a standby position SP (see FIGS. **1** to **3** and **5**) and a detection position DP (see FIG. **4**) before the standby position SP in a state supported on the lock arm **15**.

The detector **60** includes a rectangular upper plate **61**, as shown in FIGS. **2** and **10**. Two side plates **62** project substantially perpendicularly down from opposite side edges of the upper plate **61** and extend in the front-back direction along the opposite side edges of the upper plate **61**. A rear portion **63** extends in the width direction and is unitary with the rear ends of both side plates **62** and the upper plate **61**. A long, narrow resilient locking portion **64** extends forward from a widthwise center of a lower part of the front surface of the rear portion **63**.

As shown in FIGS. **2** and **10**, the rear portion **63** bulges farther toward opposite widthwise sides and upper side than the upper plate **61** and the detector **60** can be moved by gripping the rear portion **63**. The upper plate **61** is flat and a circular confirmation window **65** is open on a rear end part, as shown in FIG. **10**. Further, two mold removal holes **66** are

open in the width direction in a substantially central part of the upper plate **61** in the front-back direction by the passage of a mold when retaining receiving portions **68** to be described later are molded. Note that the front end of the upper plate **61** is arranged to be retracted more backward with respect to the front ends of the side plates **62** and the front end of the resilient locking portion **64**.

As shown in FIG. **10**, two rail receiving grooves **67** extend in the front-back direction on the inner surfaces of the side plate portions **62** and are open on the front ends. Further, two retaining receiving portions **68** project below the rail receiving portions **67** in substantially central parts of the inner surfaces of the side plates **62** in the front-back direction.

As shown in FIG. **10**, two restricting portions **69** project on front end parts of outer side edges of the side plates **62**. The restricting portions **69** are arranged before the front end of the upper plate **61**. The front end of each restricting portion **69** is inclined back toward a projecting tip and the rear end thereof is arranged along the width direction. As shown in FIG. **6**, a vertical dimension of the restricting portion **69** is slightly smaller than a width of the guide **27** and a dimension thereof in the front-back direction is sufficiently smaller than a groove width of the escaping portion **28** in the front-back direction.

As shown in FIGS. **3** and **4**, the resilient locking portion **64** is deflectable and deformable substantially in the vertical direction or in/out toward and away from the housing main body **11**. In this case, the resilient locking portion **64** displaced up and contacts the upper plate **61**, thereby preventing excessive deformation of the resilient locking portion **64**. Further, a claw-like lock **71** projects down on the front end of the resilient locking portion **64**.

When the detector **60** is assembled with the lock arm **15**, the upper plate **61** is arranged to cover the arm main body **17** from above, the resilient locking portion **64** is inserted into the inserting tube **18** of the arm main body **17**, the side plates **62** are arranged at opposite lateral sides of the inserting tube **18** and the rails **23** are fit into the rail receiving portions **6**, **7** as shown in FIGS. **1** and **2**.

As shown in FIG. **2**, the upper wall of the inserting tube **18** is sandwiched between the upper plate **61** and the resilient locking portion **64** of the detector **60**. When the detector **60** is at the standby position SP, the retaining receiving portions **68** are arranged to contact the front ends of the retaining portions **24** to prevent a backward movement of the detector **60** and the locking projection **71** is arranged to contact the rear end of the lock **22** to prevent a forward movement of the detector **60** and to hold the detector **60** is held at the standby position SP.

Further, as shown in FIG. **4**, when the detector **60** is at the detection position DP, the lock **71** is arranged to contact the front end of the lock **22** to prevent a backward movement of the detector **60** and the front end of the upper plate **61** is arranged to contact the rear end of the stopper wall **26** to prevent a forward movement of the detector **60**. As a result, the detector **60** is held at the detection position DP. The arm main body **17** cannot be confirmed visually through the confirmation window **65**, as shown in FIG. **2**, when the detector **60** is at the standby position SP, but can be confirmed visually through the confirmation window **65**, as shown in FIG. **4**, when the detector **60** is at the detection position DP. Thus, the position of the detector **60** can be confirmed through the confirmation window **65**.

In assembling the detector **60** with the lock arm **15**, the resilient locking portion **64** is inserted into the inserting tube **18** from behind, the rails **23** are inserted into the rail receiving grooves **67** and the restricting portions **69** are inserted into the guides **27**. In that state, the detector **60** is slid forward to the standby position SP (see FIGS. **1** to **3**). At the standby position SP, the restricting portions **69** are arranged to face the both escaping portions **28** from below, as shown in FIG. **5**.

The housing **10** then is connected to the mating housing **90** along the connecting direction CD. In the process of connecting the two housings **10**, **90**, the lock **93** of the mating housing **90** interferes with the lock **22** to deflect and deform the lock arm **15**. Thus, the arm main body **17** is inclined and the detecting member **60** assembled with the arm main body **17** also is inclined. When the detector **60** is inclined, the restricting portions **69** are inserted into the escaping portions **28** from below to avoid interference of the restricting portions **69** and the side walls **25**. Further, the stopper wall **26** of the housing **10** is located at a forward projecting position of the resilient locking portion **64** of the detector **60** in the inclined state.

Thereafter, when the two housings **10**, **90** reach a proper connection position as shown in FIG. **3**, the lock **22** moves over the lock **93**, the lock arm **15** is resiliently displaced in the return direction and the lock **22** engages the rear end of the lock projection **93**. In this way, the two housings **10**, **90** are held in a connected state. When the two housings **10**, **90** reach the proper connection position, each terminal fitting **50** is connected electrically to the corresponding mating terminal fitting **80** (see FIG. **4**).

Further, when the two housings **10**, **90** reach the proper connection position as shown in FIG. **3**, the lock projection **93** is fit into the lock hole **21** to push up the locking projection **71**, thereby releasing a locked state of the locking projection **71** and the lock **22**. In this way, a movement of the detector **60** to the detection position DP is allowed.

Subsequently, the detector **60** is pushed toward the detection position DP. In the process of moving the detector **60** toward the detection position DP, the locking projection **71** slides on the upper surfaces of the lock projection **93** and the lock **22**. Thus, the resilient locking portion **64** is kept deflected. At this time, the upper plate **61** of the detector **60** also is pushed up by the resilient locking portion **64** to be resiliently deflected and deformed (see FIG. **3**). If the detector **60** is kept entirely inclined except at the resilient locking portion **64** when moving toward the detection position DP, the restricting portions **69** contact the front walls of the escaping portions **28** and prevent the detector **60** from being pushed to the detection position DP while being kept in the inclined state. Further, if it is attempted to push the detector **60** kept in the entirely inclined state to the detection position DP, the front ends of the restricting portions **69** slide on guiding inclined surfaces **28***a* formed on the lower ends of the front walls of the escaping portions **28** to be guided down. Thus, the inclined state of the detector **60** is canceled gradually. In this way, the detector **60** is returned to a horizontal posture extending along the front-back direction (connecting direction CD). As the detector **60** returns substantially to the horizontal posture, the restricting portions **69** are inserted into the guides **27**. The restricting portions **69** then slide on the guides **27** and move forward to guide the detector **60** to the detection position DP.

When the detector **60** reaches the detection position DP, as shown in FIG. **4**, the locking projection **71** moves over the upper surface of the lock **22** and the resilient locking portion **64** is displaced resiliently in the return direction. In this way, the locking projection **71** is arranged to lock to the front end of the lock **22** and a movement of the detector **60** toward the standby position SB in the return direction is prevented.

On the other hand, if the two housings **10**, **90** are in a semi-connected state, the lock **71** is not pushed up by the lock projection **93** and the locked state of the locking projection **71** and the lock **22** is maintained. Thus, the detector **60** cannot be

moved from the standby position SP to the detection position DP. Therefore, if the detector **60** is immovable, it can be judged that the two housings **10**, **90** are in the semi-connected state.

As described above, the restricting portions **69** come into contact with the front walls of the escaping portions **28** if the detector **60** is in the inclined state when being pushed to the detection position DP. This prevents the detector **60** from reaching the detection position DP while being kept in the inclined state. Further, the detector **60** can reach the detection position DP in a state corrected to the horizontal posture by being guided by the guiding inclined surfaces **28***a* of the escaping portions **28**. Thus, the front end of the detector **60** interferes with the stopper wall **26** located at an intermediate position of a virtual movement path of the detector **60** when the detector **60** in the inclined state is pushed directly forward, and the detector **60** does not reach the detection position DP, thereby avoiding a situation where the detector **60** is not held at the detection position DP and comes out of the housing **10** and other unfavorable situations.

Further, in the process of moving the detector **60** to the detection position DP, the restricting portions **69** are inserted into the guides **27**, thereby ensuring stability in movement when the detector **60** reaches the detection position DP from the standby position SP.

The invention is not limited to the above described and illustrated embodiment. For example, the following modes are also included in the technical scope of the present invention.

The front ends of the escaping portions may arcuately extend toward front end sides of the guide portions.

The guides that function to guide the movement of the detector can be omitted.

The locking projection of the resilient locking portion may be arranged to be lockable to a recess of the mating housing, thereby preventing a return movement of the detector to the standby position.

The numbers of the restricting portions and the escaping portions are arbitrary. For example, one restricting portion and one escaping portion may be respectively provided on the detector and the housing.

REFERENCE SIGNS

10 . . . housing
15 . . . lock arm
26 . . . stopper wall (wall)
27 . . . guide portion
28 . . . escaping portion
28*a* . . . guiding inclined surface
60 . . . detecting member
69 . . . restricting portion
90 . . . mating housing

What is claimed is:

1. A connector, comprising:

a housing configured for connection to a mating housing along a connecting direction and including at least one deflectable lock arm, side walls extending in the connecting direction at opposite respective sides of the lock arm, guide grooves formed in opposed facing surfaces of the side walls and extending in the connecting direction, and an escaping recess formed in each side wall and extending up from the respective guide groove in a direction intersecting the connecting direction; and

at least one detector movable substantially in a connecting direction from a standby position to a detection position in a state supported on the lock arm, restricting portions projecting from opposite sides of the detector and slidably engaged in the guide grooves of the side walls, the restricting portions being configured to fit respectively in the escaping recesses, wherein:

the lock arm is deflected and deformed and the detector is kept at the standby position in a state inclined with respect to the connecting direction in the process of connecting the housing to the mating housing;

the lock arm is displaced in a return direction to hold the mating housing in a connected state and the detector is allowed to move to the detection position as the housing is connected properly to the mating housing; and

the restricting portions are inserted respectively in the escaping recesses when the detector is inclined in a connecting process and configured to prevent the detector from reaching the detection position while being kept in an inclined state by causing the restricting portions to contact a wall surface substantially facing in a moving direction of the detector when the detector moves from the standby position to the detection position.

2. The connector of claim **1**, wherein the slidable engagement of the guides and the restricting portions guide a movement of the detector in the process of moving the detector from the standby position to the detection position.

3. The connector of claim **2**, wherein opening edges of the guides and/or of the escaping portions are curved and/or chamfered.

4. The connector of claim **1**, wherein the walls of the housing are present at an intermediate position of a virtual movement path when the detector in the inclined state in the connecting process is assumed to move to the detection position while being kept in the inclined state.

5. The connector of claim **1**, wherein the detector includes an upper plate, two side plates extending substantially in the connecting direction along the upper plate, a rear portion extending in the width direction and a resilient locking portion substantially extending forward from the rear portion.

6. The connector of claim **1**, wherein a front end of each of the restricting portions is inclined back toward a projecting tip and a rear end of each of the restricting portion is arranged along the width direction.

7. The connector of claim **1**, wherein, when the detector is at the standby position, a retaining receiving portion thereof is arranged to contact a retaining portion of the housing to prevent a backward movement of the detector and a locking projection of the detector is arranged to contact a rear end of a lock of the housing to prevent a forward movement of the detector.

8. A connector of claim **7**, wherein, when the detector is at the detection position, the locking projection is arranged to contact the lock to prevent a backward movement of the detector and the upper plate is arranged to contact a stopper wall of the housing to prevent a forward movement of the detector.

9. The connector of claim **1**, wherein at least one confirmation window is provided in the detector and/or the housing so as to allow confirming the position of the detector through the confirmation window.

10. A connector, comprising:

a housing configured for connection to a mating housing and including at least one deflectable lock arm; and

at least one detector movable substantially in a connecting direction from a standby position to a detection position in a state supported on the lock arm, wherein:

the lock arm is deflected and deformed and the detector is kept at the standby position in a state inclined with

respect to the connecting direction in the process of connecting the housing to the mating housing;

the lock arm is displaced in a return direction to hold the mating housing in a connected state and the detector is allowed to move to the detection position as the housing is connected properly to the mating housing;

the detector includes at least one restricting portion; and

the housing includes at least one escaping portion extending in a direction intersecting the connecting direction, configured so that the restricting portion is inserted therein when the detector is inclined in a connecting process and configured to prevent the detector from reaching the detection position while being kept in an inclined state by causing the restricting portion to contact a wall surface substantially facing in a moving direction of the detector when the detector moves from the standby position to the detection position, the escaping portion has at least one guiding inclined surface configured to cancel the inclined state of the detector and guide the detector to be in a proper posture by causing the detector moving toward the detection position to slide thereon, on the wall surface substantially facing in the moving direction of the detector to the detection position.

11. A connector, comprising:

a housing configured for connection to a mating housing and including at least one deflectable lock arm; and

at least one detector movable substantially in a connecting direction from a standby position to a detection position in a state supported on the lock arm, the detector includes an upper plate, two side plates extending substantially in the connecting direction along the upper plate, a rear portion substantially extending in the width direction, at least one restricting portion and a resilient locking portion substantially extending forward from the rear portion, a front end of the upper plate being retracted more backward with respect to the front ends of the side plates and the front end of the resilient locking portion, wherein:

the lock arm is deflected and deformed and the detector is kept at the standby position in a state inclined with respect to the connecting direction in the process of connecting the housing to the mating housing;

the lock arm is displaced in a return direction to hold the mating housing in a connected state and the detector is allowed to move to the detection position as the housing is connected properly to the mating housing; and

the housing includes at least one escaping portion extending in a direction intersecting the connecting direction, configured so that the restricting portion is inserted therein when the detector is inclined in a connecting process and configured to prevent the detector from reaching the detection position while being kept in an inclined state by causing the restricting portion to contact a wall surface substantially facing in a moving direction of the detector when the detector moves from the standby position to the detection position.

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